The Fourth Local Aggregates Assessment for Gloucestershire

Data covering the period: 01/01/2014 – 31/12/2014

Publication Date: July 2016
Headline LAA figures: 01/01/2014 – 31/12/2014

10-year rolling average of annual sales for primary land-won aggregates from within Gloucestershire (2005-2014 inclusive): -
- 1.517 million tonnes per annum for crushed rock
- 0.788 million tonnes per annum for sand and gravel;

Remaining reserves of primary land-won aggregates from within Gloucestershire as at the end of 31/12/2014: -
- 25.99 million tonnes for crushed rock;
- 5.46 million tonnes for sand and gravel
1 Introduction

1.1 Gloucestershire County Council is the Minerals Planning Authority (MPA) for Gloucestershire and under national policy is expected to prepare a Local Aggregate Assessment (LAA) on an annual basis.\(^1\)

1.2 An LAA provides data on local aggregates. It includes current levels of supply and an understanding of influences upon demand. Its prime purpose is to assist MPAs in their efforts to provide for the steady and adequate supply of local aggregates, where reasonable and practicable to do so.

1.3 Further details as to what an LAA should contain are provided within Planning Practice Guidance (PPG)\(^2\). In April 2015 the Planning Officers Society (POS) and the Mineral Products Association (the MPA) jointly produced *Practice Guidance on the Production and Use of Local Aggregates Assessments*, which has also influenced the production of this document.\(^3\)

1.4 This document is the fourth LAA for Gloucestershire and is based on data up to the end of 2014. The data has also contributed to the national aggregate mineral (AM) survey, which usually takes place every four years.\(^4\) Previous LAAs for Gloucestershire are available to view online along with a comprehensive baseline report, which supported the first LAA.\(^5\)

1.5 It is broken into four main sections which consider:

- Future of demand for aggregates
- Analysis of all supply options
- Assessment of the balance between demand and supply
- Conclusions and recommendations for planning purposes

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\(^1\) National Planning Policy Framework (NPPF), paragraph 145, bullet point 1
\(^2\) Planning Practice Guidance (PPG) advise on LAAs can be viewed at:
http://planningguidance.planningportal.gov.uk/blog/guidance/minerals/planning-for-aggregate-minerals/local-aggregate-assessments/
\(^3\) POS and MPA - Practice Guidance on the Production and Use of Local Aggregates Assessments can be viewed at:
\(^4\) Information on the national (four-yearly) aggregate mineral survey (AM) can be found online on the BGS web resource – MineralsUKs, and can be viewed at:
https://www.bgs.ac.uk/mineralsuk/statistics/UKStatistics.html
\(^5\) http://www.gloucestershire.gov.uk/extra/article/115911/Local-Aggregates-Assessment
2 Future demand for aggregates

2.1 National policy advises that the established means of determining future demand for aggregates is to project forward the rolling annual average of 10 years sales data. However, consideration can also be given to other relevant local information, which might suggest a different pattern of demand could occur.

2.2 Other relevant local information may differ from location to location. It may include the level of planned development incorporating house building in both the local area and elsewhere where it may influence the availability of construction materials. National policy also advises that future demand may be determined using the average annual sales over the last three years.

10-year and 3-year rolling average of annual aggregate sales – as a projection of future demand

2.3 Table 1 sets out both the 10-year and 3-year rolling average of annual aggregate sales figures for Gloucestershire from 2005 through to 2014. For crushed rock the 10-year rolling average of annual aggregate sales as at the end of 2014 is 1.517 million tonnes per annum (mtpa) and for sand & gravel it is 0.788 mtpa.

2.4 A comparison between the 10-year and 3-year averages of annual aggregate sales shows a difference. Applying the 3-year average represents a drop of a little over 10% for crushed rock and just over 20% for sand & gravel. In annual supply terms this is the equivalent to a fall in demand of close to 150,000 tonnes less per annum for crushed rock and nearly 160,000 tonnes less per annum of sand & gravel.

2.5 Compared to the previous two LAA’s covering data for 2012 and 2013, projected demand for both sand & gravel and crushed rock has fallen. For sand & gravel the decline in forecast demand is equal to 42,000 tonnes per annum. In the case of crushed rock it is a reduction of 83,000 tonnes per annum.

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6 National Planning Policy Framework (NPPF) paragraph 145, bullet point 1 details the application of 10 years sales data as part of the LAA process;

7 National Practice Guidance Notes (NPPG) - Planning for Aggregates Section, paragraph: 064, reference ID: 27-064-20140306 introduces the approach to considering the 3 years sales data within the LAA process;
Table 1: Gloucestershire Crushed Rock (C/R) and Sand and Gravel (S/G) Sales 2005-2014 (in million tonnes per annum - mtpa)\textsuperscript{8}

<table>
<thead>
<tr>
<th>Annual aggregate sales (in million tonnes per annum)</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>10-Yr Ave</th>
<th>3-Yr Ave\textsuperscript{#}</th>
</tr>
</thead>
<tbody>
<tr>
<td>C/R</td>
<td>1.95</td>
<td>1.81</td>
<td>2.08</td>
<td>1.61</td>
<td>1.17</td>
<td>1.2</td>
<td>1.3</td>
<td>1.18</td>
<td>1.36</td>
<td>1.51</td>
<td>1.517</td>
<td>1.350</td>
</tr>
<tr>
<td>S/G</td>
<td>1.03</td>
<td>0.72</td>
<td>0.9</td>
<td>0.66</td>
<td>0.93</td>
<td>0.9</td>
<td>0.85</td>
<td>0.78</td>
<td>0.68</td>
<td>0.43</td>
<td>0.788</td>
<td>0.630</td>
</tr>
</tbody>
</table>

\textsuperscript{#} The 3-year average is based on annual aggregate sales data between 2012 – 2014 (inclusive)

Other relevant local information

The impact of growth – forecast local house building

2.6 Forecast house building over the six districts of Gloucestershire is shown in figure 1. It represents an amalgamation of locally prepared housing trajectories over the coming years, which themselves are based upon modified housing projections that seek to support the objectively assessed need (OAN) for housing. This data will likely influence the emerging planning strategies being prepared throughout the county.

2.7 Section 4 provides a discussion as to how influential forecast future house building might prove to be in respect of the future demand for aggregates. This includes a review of previous levels of house building compared with previous aggregate sales.

\textsuperscript{8} All historic sales data has been cross-referenced with that previously published within South West – Aggregate Working Party (SW-AWP) annual reports.
Figure 1: Gloucestershire forecast house building from 2016 – 2031 based on local housing trajectories

The impact of growth – economic ambitions and other planned major sub-national infrastructure projects

2.8 The government announced in June 2015 a major £35 million road investment programme for Gloucestershire focused on improvements to the M5 & A40 strategic road network. GFirst LEP – the Local Enterprise Partnership for Gloucestershire, has also secured a funding package valued in the region of £62.5 million to support economic growth in the area, which includes A419 & A40 improvements, regeneration schemes in Gloucester and Cinderford, infrastructure improvements to Gloucestershire airport and new transport hubs. Permission has also been granted for a major new Energy from Waste (EfW) facility at Javelin Park, south of Gloucester.

2.9 Outside of the county there are a number of other nationally significant infrastructure delivery programmes, which could have an impact on the future demand for aggregates from within Gloucestershire. A new nuclear power station is planned in Somerset (Hinckley Point C) and this is shortly due to reach the construction phase. In the late 2020s or early 2030s another new nuclear power station is planned for the neighbouring local authority area of South Gloucestershire (Oldbury). Early project planning by South Gloucestershire Council highlights the potential significant impact on local resources including supplies of aggregates, from this major development. The emerging South Gloucestershire Local Plan – the Policies, Sites and Places Development Plan Document, also makes specific reference to Tytherington

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10 http://www.gfirstlep.com/gfirst-LEP/Our-Priorities/Our-Vision/
11 http://planning.gloucestershire.gov.uk/publicaccess/applicationDetails.do?activeTab=summary&keyVal=M05i0SHN01600
12 http://www.edfenergy.com/energy/nuclear-new-build-projects/hinkley-point-c
13 http://www.horizonnuclearpower.com/oldbury-faq
Quarry located near to Thornbury, as a potential rail linked source and / or storage base for construction aggregate needed to build the new power station\textsuperscript{14}. Slightly further afield, approval has also been given to build a £1 billion tidal lagoon within Swansea Bay\textsuperscript{15}.

2.10 It is unlikely that the major development projects proposed nearby to Gloucestershire will have a direct influence on the demand for local land-won aggregates. There are well established aggregate supply chains, which will exploit resources much closer to each of the projects identified than those located from within Gloucestershire. Nevertheless, the likely draw on reserves may prove to be sufficient to indirectly affect future demand and patterns of sale for Gloucestershire's primary land-won aggregates. This may be as a result of generating new demands (i.e. a source of exports from Gloucestershire) caused by the diversion of more usual local supplies. Alternatively, by providing for increased local demand in affected areas this may create new supply options – such as the opening up of quarries or increasing capacities (i.e. a source of imports into Gloucestershire) that then compete with established supply chains within Gloucestershire. Nevertheless, there is no evidence at this time to suggest that local markets will be materially impacted by the development of major large-scale projects nearby to the county. Although this situation will require careful monitoring over the coming years.

Forecast demand as established through National and Sub National Guidelines on future aggregates provision (2005 – 2020)

2.11 National policy advises that MPAs must take account of published national and sub-national guidelines on future aggregate provision when preparing a minerals local plan\textsuperscript{16}. These guidelines are based on an analysis of anticipated future demand and likely supply options. Their purpose is to establish future aggregate requirements that MPAs can work towards when preparing local plans and use when deciding on planning applications. The most recent guidelines cover the period between 2005 and 2020 and are based on data analysed during the late 1990s and early 2000s. For Gloucestershire the guidelines generate an annual local apportionment equal to 2.25 mtpa for the supply of crushed rock and 1.0mtpa for sand and gravel.

2.12 The data previously set out in table 1 suggests that the historic demand for local aggregates over recent years has been lower than envisaged under the national guidelines, with the exception of sand & gravel during 2005. As a consequence, very careful consideration will need to be given to the future application of the national guidelines. Key to this will be the realistic prospect that the forecast demand for aggregate seen through the local apportionment

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\textsuperscript{14} http://consultations.southglos.gov.uk/consult/\textunderscore tDraft_PSP_Summer2014/consultationHome
\textsuperscript{15} http://www.walesonline.co.uk/business/business-news/swansea-bay-tidal-lagoon-gets-9420834
\textsuperscript{16} National Planning Policy Framework (NPPF) paragraph 145, bullet point 3
will become a reality at least for the remaining ‘active’ years of the guidelines – up to the end of 2020.

2.13 Section 4 considers the likely influences upon future aggregate demand and will therefore be a major factor in determining how significant the data behind the guidelines will prove to be.
3 Aggregate supply options

3.1 LAAs should consider all future aggregate supply options and these are discussed in the next few paragraphs.

Supplies of primary land-won aggregate – crushed rock

3.2 The countywide crushed rock landbank as at 01/01/2015 totalled 25.99 million tonnes. The remaining length of this landbank stands at 17.13 years. This is based upon the application of 10-year rolling average annual sales that amount to 1.517 million tonnes per annum. Applying the 3-year rolling average annual sales extends the remaining length of the landbank to 19.3 years.

3.3 However, the use of a countywide landbank for crushed rock may prove to be of limited value in determining the availability of future supplies. A countywide landbank does not take into account other influential factors. These include: - the number of and the continuation of inactive sites; restrictions upon the timescales for mineral working at individual sites; and the sales limits of sites. In addition, a longstanding and well established supply trend exists with crushed rock sourced from Gloucestershire that is linked to the county’s two distinct resource areas – the Forest of Dean and Cotswolds. This trend presents as a proportional split in the overall countywide supply equal to 70% from within the Forest of Dean and 30% from within the Cotswolds. The continued significance of this supply trend and how it might impact upon the availability of crushed rock is discussed in detail in Section 4

Supplies of primary land-won aggregate – sand & gravel

3.4 The countywide sand and gravel landbank as at 01/01/2015 was 5.46mt. The remaining length of this landbank is 6.9 years. This is based upon the 10-year rolling average sales of 0.788mtpa. Applying the 3-year rolling average annual sales (i.e. 0.630mtpa) would increase the remaining length of landbank to 8.7 years.

3.5 Similar to crushed rock, the length of the remaining landbank is of limited value in establishing the future availability of sand & gravel supplies. Other influential factors include productive capacities and envisaged working schedules for individual sites. These matters are discussed within Section 4.
Supplies of recycled aggregates

3.6 Data on the supply of recycled aggregates is very limited. This is partly down to the supply and demand dynamic of this type of material. Recycled aggregates in Gloucestershire are usually sourced from regeneration and redevelopment projects. They are made up of construction and demolition wastes that are mostly crushed on-site using mobile plant and then re-used without entering the supply chain or presenting onto the open aggregate market.

3.7 However, confidential survey work has been undertaken by the MPA, which indicates that in the region of 100,000 tpa of recycled aggregates may be generated at fixed sites within Gloucestershire. This is making a contribution to the overall supply of aggregates. This figure has remained fairly consistent over a number of surveys and is the equivalent of just over 5% of the total supply of primary land-won aggregates from within the county during 2014.

3.8 There is no evidence to suggest that the supply of recycled aggregates is likely to change significantly, at least in the near future. There are no notable implementation plans in place for up scaling the delivery of regeneration and redevelopment ambitions across Gloucestershire. Nevertheless, this may need to be reviewed in the event that further local surveys indicate a change in the supply trend of recycled aggregates and / or that the delivery of regeneration and redevelopment markedly increases.

Supplies of secondary aggregates

3.9 Currently, there are no secondary aggregates facilities operating in Gloucestershire. However, following the development of a new Energy from Waste (EfW) facility at Javelin Park near Gloucester, a new local source of secondary aggregate might become available in the near future17. The EfW development includes a processing facility for bottom ash, which has the potential to create a construction aggregate. Based on the proposed maximum throughput of 190,000 TPA of waste through the plant, it is estimated that approximately 45,000 TPA of bottom ash may be generated. The EfW development is due to be operational from 2019 onwards. The theoretical contribution to overall aggregate supplies is likely to be very small – equal to around 2% of the total amount of primary land-won aggregates sourced from within Gloucestershire during 2014.

17 Available from http://planning.gloucestershire.gov.uk/publicaccess/ (Ref 13/0001/INQUIR)
Supplies of marine-won aggregates

3.10 There are no active marine dredging licences or applications for future dredging affecting Gloucestershire. There are also no ports that land marine-won aggregate. However, the AM survey in 2009 shows that a relatively small amount (around 50,000 tonnes) has still been imported into the county. This may have come from the nearby ports at Avonmouth, Bristol and Newport, South Wales, which both land considerably large proportions of marine-won aggregates sourced from the South West region or Wales. No evidence exists to suggest that imports of marine-won aggregates into Gloucestershire will increase. Data covering overall regional supplies also indicate a fairly consistent annual level of supply that is equal to around 1.5 million tonnes per annum.\footnote{Taken from The Crown Estate publication ‘Marine aggregates – capacity & portfolio 2015’, which is available to view at: www.thecrownestate.co.uk}

Imports and exports of primary land-won aggregates

3.11 The AM surveys usually include data on the importation and export of aggregates to and from local areas across England. This provides a useful indicator as to the relationship that exists between markets and the supply of aggregates. At the time of preparing this report, AM survey for 2014 was not published. This means that up-to-date and full import and export data from across the country has yet to be assessed. However, some export data from Gloucestershire has been scrutinised by the MPA and is presented in the proceeding figures and paragraphs.

3.12 Figures 2 and 3 set out export destinations for primary land-won sand & gravel from Gloucestershire during 2009 and 2014. For context, as set out in Table 1, total primary land-won sand & gravel sales during these years stood at 0.935 million tonnes for 2009 and 0.43 million tonnes in 2014. This reduction in sales for the two years is equal to 46%. Figure 2 shows that in 2009, only 19% of the county’s supply remained within Gloucestershire. The rest was exported, mostly to the neighbouring authorities of Wiltshire (46%) and Oxfordshire (20%). Figure 3 identifies that for 2014, the level of exports dropped significantly. The majority of sand & gravel was retained (76%) for use and / or additional processing within the county. The only notable exports in 2014 were to Wiltshire, equal to 20% of total sand & gravel supplies from Gloucestershire. These percentage changes suggest that sand and gravel sourced from Gloucestershire is more latterly largely contributing towards local demand rather than demand generated from outside of the county.

3.13 Figures 4 and 5 present export data for primary land-won crushed rock from Gloucestershire in 2009 and 2014. Figure 4 shows that in 2009, 52% of the county’s crushed rock supply remained within Gloucestershire. The authority
areas of Worcestershire and Herefordshire (18%) and Swindon and Wiltshire (10%) accepted noteworthy proportions of exported crushed rock during the year. Figure 5 presents data for 2014 and illustrates a similar pattern to that observed with sand & gravel. The percentage of crushed rock retained within Gloucestershire during the year grew markedly from 2009 to 81%. Worcestershire and Herefordshire (10%) and elsewhere (7%) were the main destinations for crushed rock exports from Gloucestershire.

3.14 Overall the 2009 and 2014 sales datasets suggest that primary-land won aggregates from Gloucestershire are now mostly contributing towards local demand from within the county rather than demand generated within surrounding mineral planning areas. In numerical terms, the like-for-like exports for sand and gravel and crushed rock from 2009 and 2014 show a decline of 655,144 tonnes and 267,485 tonnes respectively. Whilst for the same two years sand & gravel and crushed rock sales remaining within Gloucestershire have actually increased in turn by 155,051 tonnes and 610,604 tonnes.

3.15 However, a potential qualifying factor may exist with an element of sand & gravel sales between 2009 and 2014, specifically in respect of the significant reduction in exports. In 2009, Swindon and Wiltshire were notable recipients of sand & gravel (46%) sourced from Gloucestershire. However, it is possible that a proportion of this mineral may have only moved into Wiltshire for processing before re-entering Gloucestershire as a saleable product and making a contribution to local demand. This particular local supply dynamic relates to the cross-boundary nature of sand & gravel resources sourced from within the Upper Thames Valley / Cotswold Water Park resource area.

3.16 A more complete picture of imports and exports will be included within the next (Fifth version) Gloucestershire LAA, following the publication of the AM survey for 2014 – due later in 2016. The assessment may also benefit from an analysis of other LAA’s that may appear throughout the remainder of 2016.

3.17 A full detailed review of historic data from 2009 can be found in the baseline report that also accompanies previous versions of the Gloucestershire LAA\(^\text{19}\).

\(^{19}\) Available from [http://www.gloucestershire.gov.uk/extra/article/115911/Local-Aggregates-Assessment](http://www.gloucestershire.gov.uk/extra/article/115911/Local-Aggregates-Assessment)
Figure 2: Gloucestershire sand & gravel destinations during 2009

- Gloucestershire: 13%
- Worcestershire & Herefordshire: 2%
- Oxfordshire: 2%
- Other (including Wales): 76%

Figure 3: Gloucestershire sand & gravel destinations during 2014

- Gloucestershire: 20%
- Worcestershire & Herefordshire: 0%
- Oxfordshire: 2%
- Wiltshire & Swindon: 2%
- Other (including Wales): 76%
3.18 The data set out in this LAA is for the year up to the end of 2014. Collated reserves are based only on extant permissions granted before 01/01/2015. The next (fifth version) Gloucestershire LAA will be the place where data up to the end of 2015 will be formally published. Nevertheless, during the preparation of this report, a number of new permissions have been granted, which will impact upon local aggregate supply. In the case of crushed rock, up to a maximum of 0.25 million tonnes has been added to countywide reserves, whilst for sand & gravel the figure is 0.375 million tonnes.
Planning proposals for aggregate working still to be determined

3.19 At the time of preparing this version of the Gloucestershire LAA, a number of undetermined planning proposals for aggregate working were being considered by the MPA. In total, these proposals contain theoretical yields amounting to approximately just over 15 ½ million tonnes of crushed rock and around 3 million tonnes of sand & gravel. One proposal also includes an increase in the permitted annual sales limit.

3.20 There is no guarantee that any potential provision contained within undetermined planning proposals will eventually become part of the county’s supply. Furthermore, even if permissions are forthcoming it is impossible at this time to know when aggregate working might commence. Operational restrictions (e.g. time constraints or sales limits) could also apply. Table 2 provides details of the undetermined planning proposals for aggregate working currently being considered within Gloucestershire.

Table 2: Undetermined planning proposals for the working of aggregates as at March 2016

<table>
<thead>
<tr>
<th>Proposal Site</th>
<th>Aggregate type</th>
<th>Current estimated aggregate yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stowe Hill / Clearwell Complex</td>
<td>Crushed Rock</td>
<td>15 + million tonnes²⁰</td>
</tr>
<tr>
<td>Barnhill</td>
<td>Crushed Rock – sandstone</td>
<td>0.25 + million tonnes</td>
</tr>
<tr>
<td>Manor Farm, Kempsford</td>
<td>Sand &amp; Gravel</td>
<td>3 + million tonnes</td>
</tr>
<tr>
<td>Stubbs Farm, Kempsford</td>
<td>Sand &amp; Gravel</td>
<td>Less than 0.1 million tonnes</td>
</tr>
<tr>
<td>Page’s Lane, Twyning</td>
<td>Sand &amp; Gravel</td>
<td>Less than 0.1 million tonnes</td>
</tr>
</tbody>
</table>

Potential future aggregate supply contained within undeveloped preferred areas contained within the adopted Gloucestershire Minerals Local Plan (MLP)

3.21 The adopted Gloucestershire MLP contains a number of preferred areas for aggregate extraction. These were included as a means of facilitating future aggregate provision to meet expected demand at the time the MLP was prepared. The preferred areas consider future provision for both crushed rock and sand & gravel. Presently the MLP includes a number of undeveloped

²⁰The proposal at the Stowe Hill / Clearwell complex also includes an increase in permitted sales from 0.6mpta to 0.8mtpa
preferred areas that have yet to be subject to successful planning proposals. It is estimated that these preferred areas contain yields totalling around 25 million tonnes of crushed rock and around 9 million tonnes of sand & gravel.

3.22 Similar to undetermined planning proposals for aggregate working, it is impossible at this time to establish how much of the undeveloped preferred areas will ultimately contribute towards Gloucestershire’s future aggregate supply. However, some degree of planning certainty remains with these preferred areas as they still form part of the development plan for the county. Furthermore, the MPA is currently working on a replacement Minerals Local Plan for Gloucestershire, which has considered the potential of retaining undeveloped preferred areas as candidate plan allocations. In addition, some undeveloped preferred areas are also subject to planning proposals, which have yet to be determined. These are discussed under paragraphs 3.19 and 3.20. Details of undeveloped preferred areas contained within the adopted MLP are provided within table 3.

Table 3: Undeveloped preferred areas contained within the adopted Gloucestershire Minerals Local Plan (MLP)

<table>
<thead>
<tr>
<th>Undeveloped MLP preferred area</th>
<th>Aggregate type</th>
<th>Current estimated aggregate yield (as of March 2016)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stowe Hill / Clearwell</td>
<td>Crushed Rock – limestone</td>
<td>Around 2 million tonnes</td>
</tr>
<tr>
<td>Drybrook</td>
<td>Crushed Rock – limestone</td>
<td>Around 4 million tonnes</td>
</tr>
<tr>
<td>Stowfield</td>
<td>Crushed Rock – limestone</td>
<td>Negligible</td>
</tr>
<tr>
<td>Daglingworth</td>
<td>Crushed Rock – limestone</td>
<td>Around 9 million tonnes</td>
</tr>
<tr>
<td>Huntsmans</td>
<td>Crushed Rock – limestone</td>
<td>10 + million tonnes</td>
</tr>
<tr>
<td>Dryleaze Farm</td>
<td>Sand &amp; Gravel</td>
<td>Negligible</td>
</tr>
<tr>
<td>Cerney Wick</td>
<td>Sand &amp; Gravel</td>
<td>0.5 million tonnes</td>
</tr>
<tr>
<td>Horcott / Lady Lamb Farm</td>
<td>Sand &amp; Gravel</td>
<td>2.5 + million tonnes</td>
</tr>
<tr>
<td>Kempsford / Whelford</td>
<td>Sand &amp; Gravel</td>
<td>6 + million tonnes</td>
</tr>
</tbody>
</table>

* - Part of these undeveloped MLP preferred areas are also subject to current planning proposals that have still to be determined as of March 2016 – see table 2
4 **Assessment of balance between supply and demand**

4.1 This section of the report investigates potential factors that may influence future demand and supply patterns for Gloucestershire’s primary land-won aggregates. Its purpose is to assist the MPA in determining how best to make provision through plan making, to keep pace with future demand. The discussion provided in the following paragraphs expands upon the initial description of the data presented earlier in this report.

**Remaining aggregate landbanks – an indicator of future local supply**

4.2 Gloucestershire’s aggregate landbanks as of the end of 2014 indicate that additional provision will probably be required over the coming years for both crushed rock and sand & gravel, to help meet future demand requirements. This fact is reinforced when maintaining minimum landbank levels is also taken into account\(^\text{21}\).

4.3 In the case of crushed rock, countywide reserves are theoretically sufficient to meet projected annual demand until the end of 2031. Additional reserves would need to be available from 2032 onwards. To accommodate a minimum rolling 10-year crushed rock landbank the timeframe reduces to 2022. For sand & gravel, countywide reserves are anticipated to expire much sooner – by 2021. Where maintaining a 7-year minimum sand & gravel landbank is concerned, new reserves would be required even earlier, from now onwards.

4.4 However, as discussed earlier in this report, the application of basic aggregate landbanks (incorporating minimum levels) may be of limited use as a reliable and accurate indicator of when new supplies will be needed in order to meet future forecast demand. A more meaningful and realistic supply assessment should incorporate other influential factors. These are discussed in a Gloucestershire context in the following paragraphs:

**Influence of productive capacities**

4.5 Productive capacity is concerned with how much aggregate that can be worked and sold from a site over a period of time and is usually controlled over an annual period – an annual sales limit. Capacities can also be affected by time restrictions on mineral working. These place a ceiling upon the delivery of supply from a site and are particularly significant where a sales limit is also in existence on condition of a planning permission. Time restrictions are normally applied by a condition on a planning permission through the use of hours of working and through an end date for working to cease.

\(^{21}\) National Planning Policy Framework (NPPF), paragraph 145, bullet point 6 advises as to the maintenance of minimum landbanks of at least 7 years for sand and gravel and at least 10 years for crushed rock
4.6 Productive capacities can create a circumstance where remaining reserves at a site or suite of sites cannot be realised in full and therefore make the maximum contribution towards meeting forecast demand.

4.7 In Gloucestershire, where all aggregate working sites are time restricted and most have a sales limit, there is a proportion of remaining aggregate reserves that will undoubtedly require further planning permissions before they are able to contribute to future projected demand. This is down to a number of sites not always working up to their sales limits and being subject to a time limit, which prevent sites from reaching exhaustion. The last recession has also had an impact on the availability of reserves by curtailing sales. This circumstance has created a bigger difference to emerge between 'actual' sales and the imposition of sales limits at many aggregate sites across the county.

4.8 Figures 9 and 10 attempt to show how productive capacities may influence Gloucestershire’s remaining aggregate supply. Modelled scenarios have been applied in both figures, which assume that all sites will work up to their sales limit and through to their permitted end dates. They also assume no new permissions will be granted to contribute to the supply. The maintenance of supplies equal to the 10-year average sales as at 2014 (i.e. the projected annual demand level) have also been illustrated within each figure.

Figure 9: Modelled scenario of crushed rock productive capacity compared with the present 10-year average sales (i.e. forecast annual demand)
The two modelled scenarios clearly indicate that productive capacity – by virtue of sales and time limits will influence the ability of Gloucestershire’s aggregate supply to contribute to forecast projected demand. This influence will be of increasing significance over the coming years. In the case of crushed rock, the productive capacity of working sites will be sufficient to meet projected demand for aggregates only up until 2022 – 2023. However, for sand & gravel it will be notably shorter, until 2016-2017.

Influence of inactive mineral working sites

As of the end of 2014, there were four inactive crushed rock aggregate working sites. Of these, three show no indication of re-opening in the foreseeable future. One site however has recently received permission for a time extension. There were no sand & gravel working sites classified as inactive in 2014.

The presence of inactive mineral working sites potentially skews the accuracy of the landbank indicator in identifying when additional aggregate supplies will need to be made available. In essence, by not securing any annual supply from inactive sites, they contribute to the creation of artificially high landbanks of remaining reserves. Where productive capacity restrictions are also in place, inactive sites could prove to be even more significant as the ability of active sites to ‘theoretically’ compensate would be significantly curtailed.
Influence of dormant mineral sites

4.12 Three crushed rock aggregate working sites were categorised as dormant within Gloucestershire up to the end of 2014. There were no dormant sand & gravel sites recorded during the year.

4.13 All dormant sites are excluded from the calculation of aggregate landbanks in accordance with national practice and as such do not have a direct impact upon supply\textsuperscript{22}. However, the receipt of planning permissions to allow aggregate working at dormant sites could prove to be influential and would make a contribution to the relevant landbank. Nevertheless, no evidence has been presented by landowners and / or operators to suggest that local dormant sites will be subject to new planning proposals in the foreseeable future. Indeed significant site-related issues would need to be overcome at several sites before any serious consideration may be given to any future aggregate working.

Influence of Gloucestershire’s crushed rock supply trend – the Forest of Dean and Cotswold resource areas

4.14 As explained within paragraph 3.3, there is a longstanding supply trend for Gloucestershire’s crushed rock related to the county’s two distinct resource areas – the Forest of Dean and Cotswolds. The supply trend presents as a proportional split equal to 70\% from the Forest of Dean and 30\% from the Cotswolds. It reflects a difference in the local markets being served and the type of aggregate materials being supplied. Whilst there have been periods of time where this trend has deviated, this is normally only within a range of + / - 5\%. Furthermore, from a review of data collected over recent years, there is no evidence to suggest that a material change has emerged.

4.15 The continuation of the supply trend may prove to be a major influence on the ability of Gloucestershire’s crushed rock aggregate supply. It will undoubtedly result in an uneven depletion of remaining aggregate reserves that specifically affects the Forest of Dean resource area much more than the Cotswolds. Its impact would be to undermine the reliability of the countywide landbank indicator by dispelling one of its key assumptions – that remaining permitted reserves decrease uniformly across the county as aggregates are being worked.

4.16 In assessing aggregate supply in the past, the MPA has introduced separate landbank indicators for the Forest of Dean and Cotswold resource areas. This has been a useful tool in helping to determine how much aggregate provision should be facilitated through the adopted Gloucestershire MLP. In previous years it has been possible to publish annual monitoring data relating to

\textsuperscript{22} National Practice Guidance Notes (NPPG) – Planning for Aggregates Section, paragraph: 083 Reference ID: 27-083-20140306
separate crushed rock landbanks. However, due to the decline in the number of working sites and distribution of independent operators, this cannot be done due to reasons of commercial confidentiality.

4.17 Nevertheless, to illustrate the potential impact of the supply trend continuing unchanged into the future, separate crushed rock landbanks have been calculated applying the 2014 data. These indicate a notable difference would exist in the anticipated length of remaining reserves in comparison to the countywide landbank indicator (see paragraph 4.3). The difference is equal to 6 years less reserves from within the Forest of Dean resource area. But for the Cotswold resource area it represents a potential extension of time amounting to 5 more years.

4.18 In addition, the continuation of the crushed rock supply trend may also heighten or lower the significance that inactive sites may have on future supply. For example, if inactive sites were concentrated within a resource area that demonstrates a higher trend of supply, the timeframe under which available reserves contribute to supply may become shortened. However, for a resource area that has a lower trend of supply, there may be no or very little influence upon availability of remaining reserves to meet demand.

Influence of additional permissions granted since 01/01/2015

4.19 Paragraph 3.18 establishes the amount of additional aggregate reserves created since the beginning of 2015. In the case of crushed rock, the contribution equates to just under 1% of the total countywide landbank as at the end of 2014. This is not deemed to be significant and therefore not likely to be a major influence upon future supply. For sand & gravel the contribution is slightly higher at a little under 7% of the total countywide landbank as at the end of 2014.

4.20 The potential impact of additional aggregate reserves since the beginning of 2015 is also likely to be diminished further as a consequence of operational restrictions being in place. These impose limits upon the amount of aggregate sales that can be attributable to these additional reserves, usually over an annual period.

Impact of recycled aggregate on supply

4.21 From the limited data on recycled aggregate that is presented onto the open market, it is unlikely to have a significant contribution to overall aggregate supplies from Gloucestershire (see paragraph 3.7). There is also no evidence to suggest that the volumes generated are likely to change in the foreseeable future.
However, the impact of recycled aggregates should not be understated, particularly as its applications are far more widespread than simply as an alternative open market supply to other aggregate sources (i.e. primary land-won, marine-won or secondary aggregates). Recycled aggregates can occur through on-site processing of construction and demolition wastes that are then re-used on-site. It is difficult to quantify the amount of recycled aggregate that has been applied in this manner throughout Gloucestershire over recent years, although it is likely to have acted as some form of suppressor upon local demand. Nevertheless, without any firm evidence that the pattern of new development will offer greater opportunity to exploit recycled aggregate (e.g. an increased focus on re-development and regeneration), its future influence is likely be limited. Furthermore, it is worth noting that recycled aggregates continue to have notable limitations in terms of specification of use compared to other aggregate sources.

Impact of secondary aggregates on supply

4.22 Albeit that in the coming years, some secondary aggregates may be produced within Gloucestershire, the anticipated volumes generated are deemed very small in comparison to the overall annual supply and remaining aggregate reserves (see paragraph 3.9). As a result locally produced secondary aggregates are unlikely to be influential with future aggregate supply from Gloucestershire.

Impact of marine-won aggregates on supply

4.23 Data presented earlier within paragraph 3.10 shows that ports within Gloucestershire do not land any marine-won aggregates and there are no plans to do so in the future. It also indicates that the county has not been a major importer and that the small amount that has arrived has only made a very limited contribution to the annual supply. In the absence of any evidence to the contrary, it is anticipated that marine-won aggregate will not make a significant contribution to future aggregate supply from Gloucestershire.

Impact of imports and exports of primary land-won aggregates on supply

4.24 Without a complete picture of imports and exports of primary land-won aggregates it is not possible at this time to determine if they are likely to influence the county’s future supply. This is a matter that will be returned to within the next (fifth) version of the Gloucestershire LAA.

4.25 Nevertheless, it worth acknowledging the noticeable difference both in the proportion and amount of exports from the county observed in 2009 and 2014
respectively. This is even more significant, when compared with the proportions and amount of supply that has remained within Gloucestershire. The overarching shift away from supplying other areas could be an indicator of the increasing importance of local demand on supply. However, until import data can be analysed it is unknown whether any externally-sourced supplies are also making a meaningful contribution to meeting local demand from within Gloucestershire.

**Impact of growth on demand – future house building**

4.26 Figure 11 sets out historic data on housing completions and aggregate sales for the previous 10 years within Gloucestershire. It shows a potential relationship may exist between local house building and the supply of primary land-won aggregates from Gloucestershire. Over the 10-year period there has been a general decline in the level of local house building that is reasonably well tracked by a fall in total aggregate sales. However, a number of deviations in this trend are also present. These deviations could be explained by the presence of other influential factors, which go beyond a simple assumption that the level of local supply is dictated by local demand. These factors may include: - changing patterns in demand for aggregates from outside of the county (e.g. exports); changing patterns of supply resulting in more or fewer imports; changing demand for aggregate from other types of development; changes in house building techniques (e.g. low carbon / sustainable code homes – where the amount of aggregate needed has decreased); and a drive towards the use of alternative aggregate sources (e.g. secondary and recycled aggregates).

![Figure 11: Gloucestershire housing completions and primary land-won aggregate sales between 2005-06 and 2014-15](image-url)
4.27 Nevertheless, whilst accepting likely weaknesses in the relationship between local house building and aggregate sales, it would still not be unreasonable to conclude that aggregates sales from Gloucestershire are likely to experience a rise over the coming years should forecast housing growth across the county occur (see figure 1). As illustrated in figure 1, it is anticipated there is strong possibility there will be a considerable uplift in local housing completions compared to the previous 10 years. For the period up to 2021, forecast local house building is expected to never drop below a 50% increase on the level experienced in 2014-15. However, whilst some degree of housing growth can reasonably be anticipated caution is expressed as to whether ‘actual’ housing delivery will match that which has been forecast. This is due to a number of factors including the capacity of the local construction industry to achieve the resulting housing completion rates in such a short time frame.

4.28 However, it remains unclear as to how significant an impact future local housing growth will have upon local aggregate sales. There is incomplete data on aggregate import trends into the county (see paragraph 3.34). Without this it is impossible to predict if a meaningful contribution is being made to Gloucestershire’s supply and whether such imports would also be able in the future to accommodate all, or part of any forecast additional demand linked to increased local house building. Furthermore, it is unknown as to whether the trend towards ever decreasing amounts of aggregate being used in house building will continue and as such act as a suppressor upon future aggregate demand. Nonetheless, there is some degree of certainty, that the availability of and subsequent contribution to the supply of alternatives to primary land-won aggregate is unlikely to have a major impact and therefore have an influence upon the relationship between future local house building and aggregate sales (see paragraphs 3.30 to 3.33).
5 LAA conclusion and recommendations for planning purposes

Demand

5.1 As at the end of 2014, the basic projected demand for primary land-won aggregates from Gloucestershire over the coming years stood at 1.517 million tonnes per annum for crushed rock and 0.788 million tonnes per annum for sand & gravel. This projection employs 10-year rolling average sales for each aggregate type between 2005 and 2014 inclusive.

5.2 An alternative projection using 3-year rolling average annual sales between 2012 and 2014 has also been analysed. It presents a lower projected demand than observed with the 10-year rolling average annual sales.

5.3 Other information that shows a different pattern of demand may need to be taken into account has been investigated. This includes levels of planned development. Whilst significant increases in local house building are anticipated to occur over the coming years, it remains unclear at this stage what impact this might have on local aggregate demand and to what extent it could cause a materially significant deviation in the current projection using 10-year rolling average sales. It presently contradicts the use of an alternative lower projection using 3-year rolling average annual sales.

5.4 There are multiple factors that may be influencing the demand for aggregate, which suggest a weakening of the basic assumption that levels of new development – such as local house building dictate aggregate sales.

5.5 In conclusion, there is insufficient evidence available at present to justify deviating from a rolling annual average of 10 years sales data for the purpose of projecting future aggregate demand for Gloucestershire.

Supply

5.6 The countywide landbank for crushed rock as at 01/01/2015 stands at 25.99mt. It is an indicator that crushed rock aggregate reserves may be available to meet projected demand for just over 17 years. In the case of sand & gravel the landbank as at 01/01/2015 was 5.46mt. The remaining length of this landbank is close to 7 years.

5.7 However, in ensuring minimum landbanks are maintained, the availability of crushed rock reserves becomes more of a medium term issue (e.g. between 5-10 years), while for sand & gravel reserves it develops into an immediate concern (e.g. less than 2 years).
5.8 Furthermore, the application of countywide landbanks for Gloucestershire is not necessarily the most reliable means of determining the availability of future aggregate reserves particularly in the case of crushed rock. The use of local landbanks in this instance may prove a more realistic method. As at the end of 2014, the use of local landbanks for the county’s two crushed rock resource areas (i.e. Forest of Dean and the Cotswolds) revealed a notable deviation in the anticipated time attributable to the availability of remaining local reserves when compared to the countywide calculation. For the Forest of Dean resource area the use of a local landbank advises that remaining reserves will deplete 6 years sooner, but in the Cotswolds, the availability of reserves will be extended by 5 years.

5.9 In addition, the county’s remaining permitted reserves are also subject to site-specific restrictions that could affect both annual supply and the overall availability of reserves over time. The likely impact of these restrictions is to constrain any possible flexibility in the availability of reserves and thus reduce the prospect they will be sufficient to keep pace with projected demand for many more years into the future.

5.10 It also remains uncertain at this stage as to the anticipated future impact upon the local supply of aggregates from imports and exports. Only limited up-to-date data is available regarding primary land-won aggregate exports. Nevertheless, it has been possible to undertaken some data analysis, which would appear to show that demand from within Gloucestershire does not mirror the overall decline observed, both in terms of projected demand (see paragraph 2.5) and exports (see paragraph 3.14). This may be an indicator that primary-land won aggregates sourced from Gloucestershire are still contributing towards local demand but this is increasingly not the case in respect of demand from outside of the county.